

NAME:

DATE:

Unit-2 Mastery Assessment (version 638)

Question 1 (10 points)

Let f represent a function. If $f[34] = 4$, then there exists a knowable solution to the equation below.

$$y = 2 \cdot (f[23x - 35] + 17)$$

Find the solution.

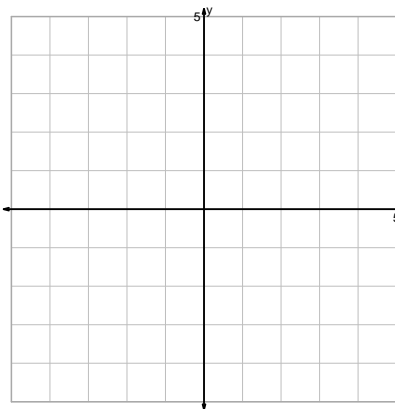
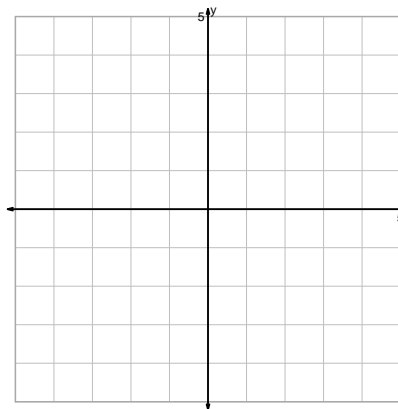
$$x =$$

$$y =$$

Question 2 (20 points)

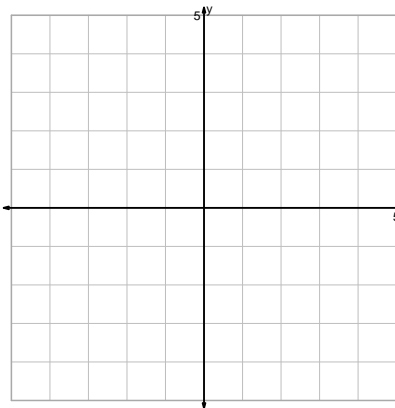
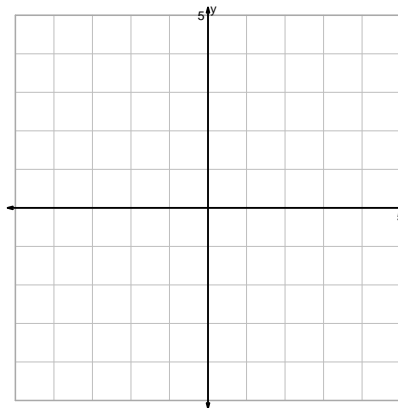
Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

$$y = \frac{\sqrt[3]{x}}{2}$$



$$y = 2 \cdot x^3$$

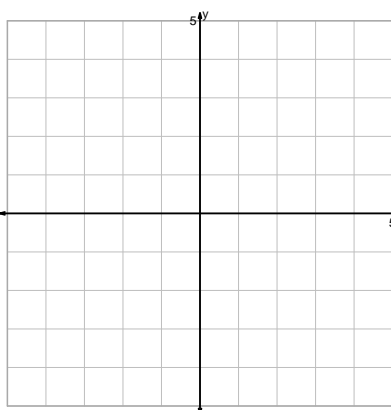
$$y = x^2 - 2$$



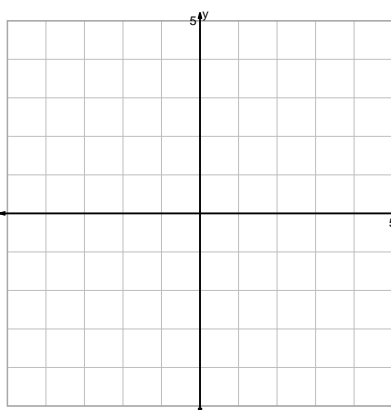
$$y = x^2 + 2$$

Question 2 continued...

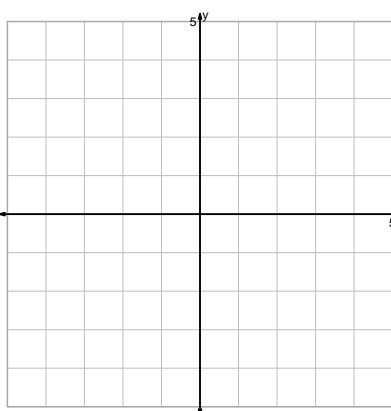
$$y = \log_2(x+2)$$



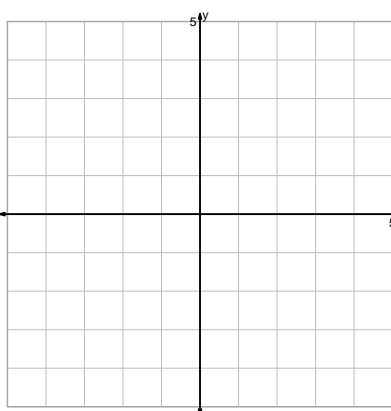
$$y = \log_2(-x)$$



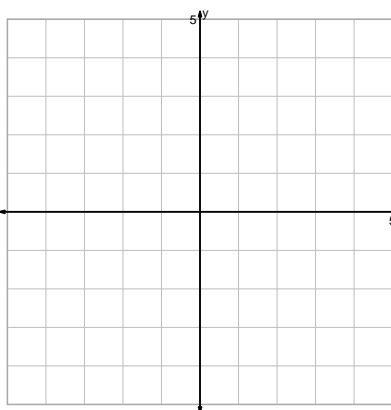
$$y = \sqrt[3]{\frac{x}{2}}$$



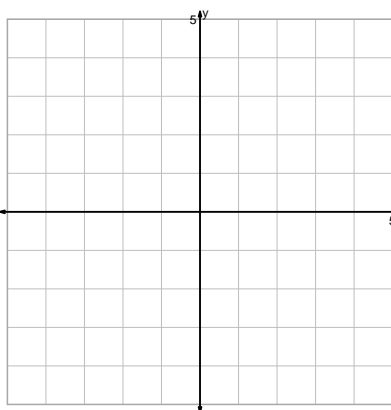
$$y = 2^{x-2}$$



$$y = -2^x$$

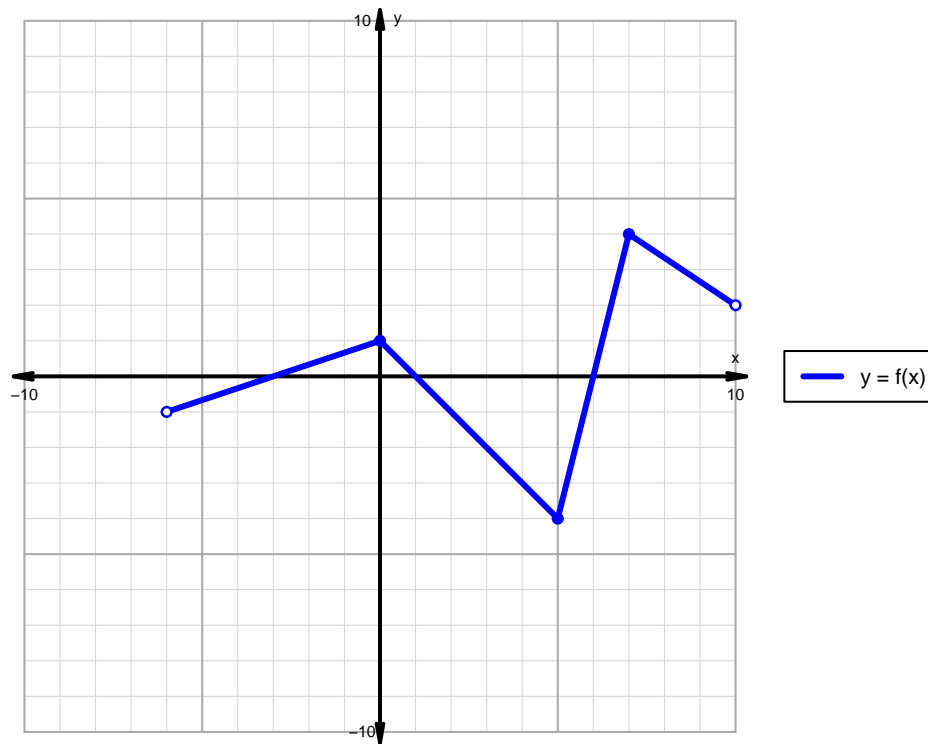


$$y = (2x)^3$$



Question 3 (20 points)

A function is graphed below.



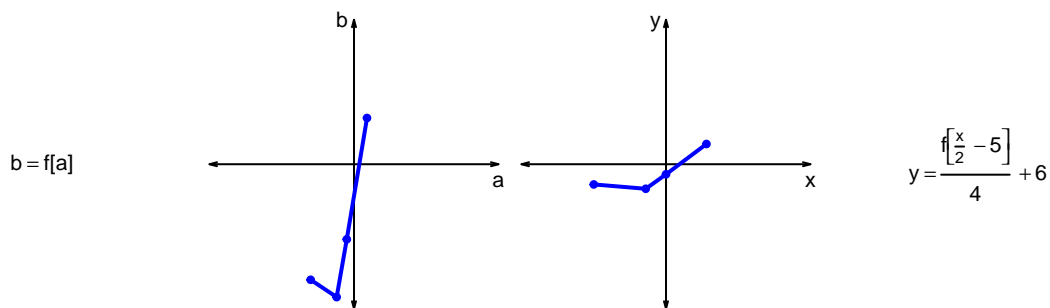
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f\left[\frac{x}{2}-5\right]}{4} + 6$ are represented below in a table and on graphs.

a	b	x	y
-30	-80	-50	-14
-12	-92	-14	-17
-5	-52	0	-7
9	32	28	14



- a. Write formulas for calculating x from a and calculating y from b . (Or, write the coordinate transformation formula.)

- b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f\left[\frac{x}{2}-5\right]}{4} + 6$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

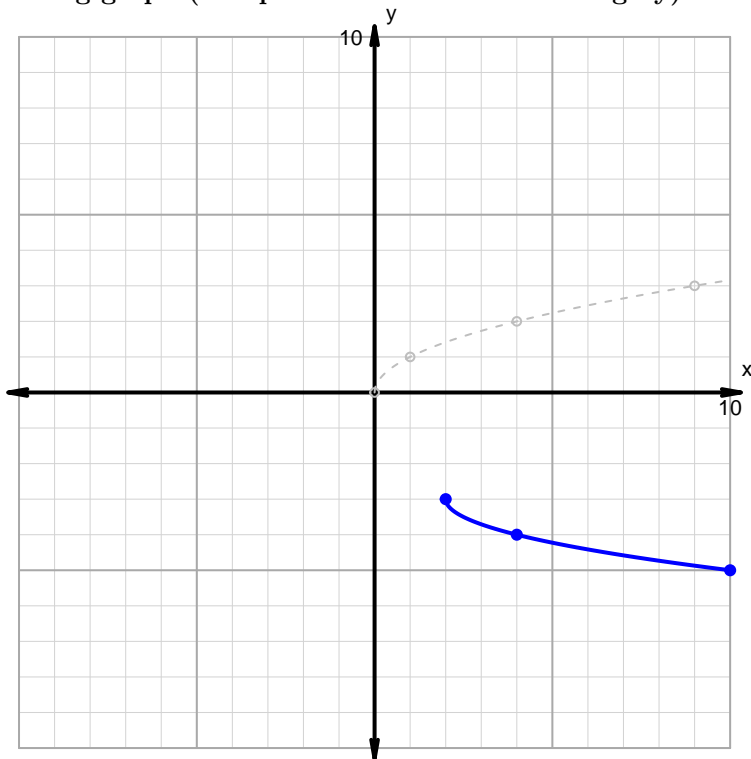
Horizontal transformations

1. Translate right by distance 1.
2. Horizontal stretch by factor 2.

Vertical transformations

1. Vertical reflection over x axis.
2. Translate down by distance 3.

Resulting graph (and parent function in dashed grey):

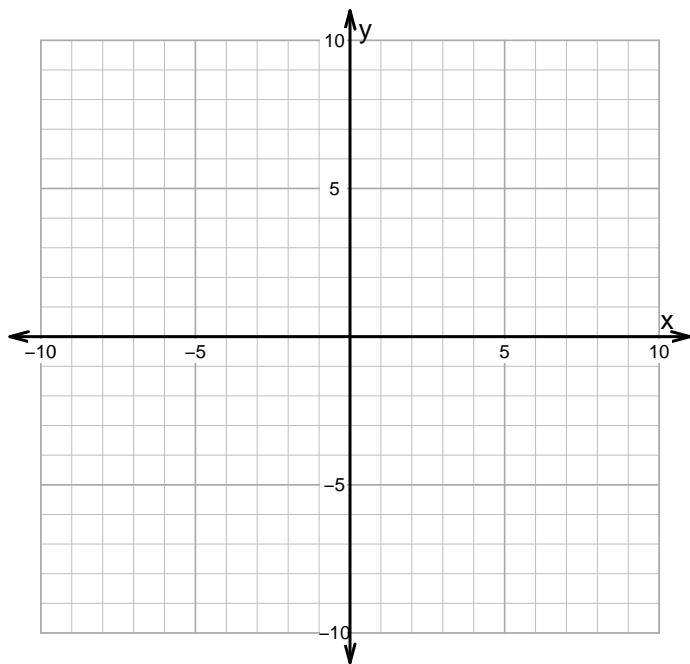


- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = -3 \cdot |x - 5| + 6$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	